The water company for the algae industry
Product- & service portfolio Liqoflux

Purification water/media for production

Production

- Disk filters
- Ultra Filtration

Harvesting
Product- & service portfolio Liqoflux

- Purification water/media for production
- Measure-ment & control critical values
- • Ph
  • Oxigen
  • Turbidity
  • Etc.

Production

Harvesting
Product- & service portfolio Liqoflux

Production
- Purification water/medium for production
- Measurement & control critical values

Harvesting
- Algae pre-concentration
- Pre-treatment: PE cyclone & drumfilters
- Capillary algae pre-concentration solution
Product- & service portfolio Liqoflux

Production

- Purification water/media for production
- Measurement & control critical values

Harvesting

- Algae pre-concentration

Water/media Recycling

- Capillary water recycling solution
- UV solutions
Challenges Algae Producers

- Processing of larger volumes
- Recycling of the water/media

Scalable solutions: anticipate on growth

- Reliable solutions: 24/7
- Certifications: food grade
- Energy efficient processing
- Low Capex and Opex
One single technology ➔ Technology train

Select the right technology for the right task
Learn from other industries: best practices

2 Step Harvesting approach
2 Step harvesting approach

Harvesting high volumes of Algae cultures:
• **Step 1**: Start with the Liqoflux Capillary Algae Pre-Concentration System to separate the ‘easy’ water and pre-concentrate the algae culture up to 10-15 grams per litre.
• **Step 2**: Select the right separation technology to separate the ‘difficult’ water and produce a high dry solid algae paste.
2 Step harvesting approach

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### Production

- **0,01-3 gr/l**
- **0,25 gr/l**
- **1 m3 10 gr/l**
- **40 m3 0,25 gr/l**
- **39 m3**
- **1 m3 10 gr/l**
- **Clean Water 90-95%**
- **Centrifuge**
- **Liqoflux**
- **Harvesting 200-300 gr/l**
- **Pre-concentration 10-15 gr/l**
How does Liqoflux work?

Feed Tank → Circulation Tank → Liqocap filter → Filtrate pump → Drain concentrate
Liqoflux Capillary Algae Pre-concentration System

• The LiqoCap filters and the unit are specially designed for the Algae industry based on proven concepts & technologies

• Smooth structure of the membranes and well designed system result in a stable flux and minimal fouling

• Separates the algae culture into a concentrate containing all the algae cells and clean effluent water, free from algae and bacteria: 100% separation of the Algae Biomass

• The clean water is ready for recycling to your algae production system

• Liqoflux solutions are foodgrade certified and suitable for both fresh & marine water applications

• Reduces the TCO per kg Dry Weight algae significantly
Liqoflux offers solutions for pilot/demonstration sites with 1-2 Capillary filters and production facilities with 10, 14, 28 or 56 Capillary filters. On average, 1 Capillary filter pre-concentrates 1 – 1,5 m³/hour.
Liqoflux Capillary Algae Pre-concentration System

- Continuous 24/7 operations
- High capacity systems up 50 - 80 m3/h
- Fully automatic, PLC controlled
- Concentration factor adjustable
Liqoflux Capillary Algae Pre-concentration System

- Fully automatic, PLC controlled
- Concentration factor adjustable

- Proven technology
- Easy to operate – Plug & Play
- No infrastructure hassle
- It just works!

Continuous 24/7 operations
New high capacity systems up 50 - 80 m3/h
Belgium based Tom Algae is a young company which has developed its own microalgal ‘cultivar’ and manufactures a freeze dried product exceptionally rich in Omega 3 fatty acids both (EPA and DHA), proteins and vitamins for feed and enrichment source in hatcheries for shrimps. Their product is a game changer in algae innovation as it can be stored for more than 12 months and can be replace the often unpredictable live feed that is currently used in the industry.
Production 0.2-0.5 gr/l

Pre-concentration 5-10 gr/l

Harvesting 200-300 gr/l

Freeze dryer
Production 0.2-0.5 gr/l

Pre-concentration 5 - 10 gr/l

Harvesting 200-300 gr/l

Freeze dryer

Night (unattended)

Culture

Clean Water

90-95%

Concentrate

Effluent

Algae paste

Step 1

Step 2

TomAlgae sustainable algae production

LIQOFLUX

evodos separation excellence

Reference Case
Step 1
- Night (unattended)
- Culture
- Clean Water
- Concentrate: 90-95%

Step 2
- Day shift (attended)
- Algae paste
- Harvesting: 200-300 gr/l

Production: 0.2-0.5 gr/l
Pre-concentration: 5-10 gr/l
Harvesting: 200-300 gr/l
Freeze dryer
Extensive experience in Algae pre-concentration

<table>
<thead>
<tr>
<th>Client Cases</th>
<th>Client 2</th>
<th>Client 3</th>
<th>Client 4</th>
<th>Client 5</th>
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<tbody>
<tr>
<td>** Continent**</td>
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<td>** Water**</td>
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<td>Brackish</td>
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<td>Marine</td>
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<td>** Algae strain**</td>
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<td>Heamato-coccus</td>
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<td>Dunaliella &amp; Tetraselmis</td>
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<tr>
<td>Nanno</td>
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<tr>
<td>Tretraselmis &amp; Nanno</td>
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<tr>
<td>** Flux per Liqocap filter (l/h)**</td>
<td>1,700</td>
<td>1,000 - 1,900</td>
<td>1,290</td>
<td>1,200 – 1,400</td>
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<tr>
<td>** Input Algae culture concentration (gr/l)**</td>
<td>0.2</td>
<td>0.2-0.5</td>
<td>0.25-0.45</td>
<td>0.5</td>
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<tr>
<td>** Liqoflux output concentration (gr/l)**</td>
<td>12.8</td>
<td>12</td>
<td>10</td>
<td>5-7</td>
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</tbody>
</table>
Business case: 1 Step vs. 2 Step harvesting

Harvesting 70 m³/h
320 days/year, 20 hours/day
Algae culture 0.7 gr/l

Capacity Liqoflux 70 m³/h
Capacity Centrifuge 3 m³/h

Superior financials
2 Step harvesting
The water company for the algae industry

Proven technology
Easy to operate – Plug & Play
No infrastructure hassle
It just works!